

Appl. No. 10/637,224
Amdt. Dated April 22, 2005
Reply to Office Action of January 5, 2005

Attorney Docket No. 81754.0098
Customer No. 26021

Amendments to the Claims

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1-10. (Canceled)

11. (Currently amended) A method for examining a signal supply apparatus in which signals having specified voltages supplied from a plurality of signal supply sources are subject to impedance conversion, respectively, by a plurality of impedance conversion devices, and supplied to a plurality of output lines, respectively, the method comprising:

short-circuiting each of the plurality of output lines upon examination; and

comparing a current value detected on the short-circuited lines and a specified current value to thereby determine whether the signal supply apparatus is good or bad, wherein the signal supply apparatus is determined to be good when the detected current value is below the specified current value, and wherein the signal supply apparatus is determined to be bad when the detected current value exceeds the specified current value.

12. (Currently amended) A method for examining a signal supply apparatus in which signals are subject to impedance conversion by a plurality of impedance conversion devices, respectively, and supplied to a plurality of output lines, the method comprising:

short-circuiting each of the plurality of output lines upon examination; and

comparing a composite current consumption value for the plurality of impedance conversion devices and a specified current value to determine whether the signal supply apparatus is good or bad, wherein the signal supply apparatus is determined to be good when the composite current consumption value is below the specified current value, and wherein the signal supply apparatus is determined to be bad when the composite current consumption value exceeds the specified current value.

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13. (Currently amended) A signal supply apparatus in which signals having specified voltages supplied from a plurality of signal supply sources are subject to impedance conversion, respectively, by a plurality of impedance conversion devices, and supplied to a plurality of output lines, respectively, comprising:

means for short-circuiting each of the plurality of output lines upon examination; and

means for comparing a current value detected on the short-circuited lines and a specified current value to thereby determine whether the signal supply apparatus is good or bad, wherein the signal supply apparatus is determined to be good when the detected current value is below the specified current value, and wherein the signal supply apparatus is determined to be bad when the detected current value exceeds the specified current value.

14. (Currently amended) A signal supply apparatus in which signals are subject to impedance conversion by a plurality of impedance conversion devices, respectively, and supplied to a plurality of output lines, comprising:

means for short-circuiting each of the plurality of output lines upon examination; and

means for comparing a composite current consumption value for the plurality of impedance conversion devices and a specified current value to determine whether the signal supply apparatus is good or bad, wherein the signal supply apparatus is determined to be good when the composite current consumption value is below the specified current value, and wherein the signal supply apparatus is determined to be bad when the composite current consumption value exceeds the specified current value.

15. (Currently amended) A semiconductor device including a signal supply apparatus in which signals having specified voltages supplied from a plurality of signal supply sources are subject to impedance conversion, respectively, by a plurality of impedance conversion devices, and supplied to a plurality of output lines, respectively, wherein the signal supply apparatus comprises:

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a plurality of switching elements provided for the corresponding respective plurality of output lines;

a test terminal for inputting a test signal that controls operation of each of the plurality of switching elements; and

a detection terminal that is connected to the short-circuited lines,
wherein the signal supply apparatus is examined by:

short-circuiting each of the plurality of output lines upon examination; and

comparing a current value detected on the short-circuited lines and a specified current value to thereby determine whether the signal supply apparatus is good or bad, wherein the signal supply apparatus is determined to be good when the detected current value is below the specified current value, and wherein the signal supply apparatus is determined to be bad when the detected current value exceeds the specified current value.

16. (Currently amended) A data line driver IC including a signal supply apparatus in which signals having specified voltages supplied from a plurality of signal supply sources are subject to impedance conversion, respectively, by a plurality of impedance conversion devices, and supplied to a plurality of output lines, respectively, wherein the signal supply apparatus comprises:

a plurality of switching elements provided for the corresponding respective plurality of output lines;

a test terminal for inputting a test signal that controls operation of each of the plurality of switching elements; and

a detection terminal that is connected to the short-circuited lines,
wherein the signal supply apparatus is examined by:

short-circuiting each of the plurality of output lines upon examination; and

comparing a current value detected on the short-circuited lines and a specified current value to thereby determine whether the signal supply apparatus is good or bad,

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wherein the signal supply apparatus is used as a driver device to drive each of a plurality of data lines in a display section using electro-optical elements, and wherein, after a voltage is supplied to the test terminal and each of the plurality of switching elements is operated, a voltage with a voltage width range corresponding to $\pm(\text{LSB})/2$ with respect to a signal having the specified voltage to be supplied to the electro-optical elements is supplied through the detection terminal to the short-circuit line, and a minimum value among the current values detected at the detection terminal in response thereto is compared with the specified current value to make the good-or-bad determination.

17. (Canceled)

18. (Currently amended) A data line driver IC according to claim 17 16, wherein the specified voltage is set as a voltage that is supplied to the electro-optical element when the display section displays an intermediate gradation.

19. (Currently amended) An electro-optical apparatus comprising a data line driver IC including a signal supply apparatus in which signals having specified voltages supplied from a plurality of signal supply sources are subject to impedance conversion, respectively, by a plurality of impedance conversion devices, and supplied to a plurality of output lines, respectively, wherein the signal supply apparatus comprises:

a plurality of switching elements provided for the corresponding respective plurality of output lines;

a test terminal for inputting a test signal that controls operation of each of the plurality of switching elements; and

a detection terminal that is connected to the short-circuited lines,

wherein the signal supply apparatus is examined by:

short-circuiting each of the plurality of output lines upon examination; and

comparing a current value detected on the short-circuited lines and a specified current value to thereby determine whether the signal supply apparatus is good or bad, wherein the signal supply apparatus is used as a driver device to drive

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each of a plurality of data lines in a display section using electro-optical elements,
and

wherein, after a voltage is supplied to the test terminal and each of the plurality of switching elements is operated, a voltage with a voltage width range corresponding to $\pm(\text{LSB})/2$ with respect to a signal having the specified voltage to be supplied to the electro-optical elements is supplied through the detection terminal to the short-circuit line, and a minimum value among the current values detected at the detection terminal in response thereto is compared with the specified current value to make the good-or-bad determination.

20. (Currently amended) An electronic apparatus comprising an electro-optical apparatus comprising a data line driver IC including a signal supply apparatus in which signals having specified voltages supplied from a plurality of signal supply sources are subject to impedance conversion, respectively, by a plurality of impedance conversion devices, and supplied to a plurality of output lines, respectively, wherein the signal supply apparatus comprises:

a plurality of switching elements provided for the corresponding respective plurality of output lines;

a test terminal for inputting a test signal that controls operation of each of the plurality of switching elements; and

a detection terminal that is connected to the short-circuited lines,

wherein the signal supply apparatus is examined by:

short-circuiting each of the plurality of output lines upon examination; and

comparing a current value detected on the short-circuited lines and a specified current value to thereby determine whether the signal supply apparatus is good or bad, wherein the signal supply apparatus is used as a driver device to drive each of a plurality of data lines in a display section using electro-optical elements,
and

wherein, after a voltage is supplied to the test terminal and each of the plurality of switching elements is operated, a voltage with a voltage width range

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corresponding to $\pm(\text{LSB})/2$ with respect to a signal having the specified voltage to be supplied to the electro-optical elements is supplied through the detection terminal to the short-circuit line, and a minimum value among the current values detected at the detection terminal in response thereto is compared with the specified current value to make the good-or-bad determination.

21. (Currently amended) A signal supply apparatus in which signals having specified voltages supplied from a plurality of signal supply sources are subject to impedance conversion, respectively, by a plurality of impedance conversion devices, and supplied to a plurality of output lines, respectively, wherein the signal supply apparatus is adapted to be examined to determine whether the signal supply apparatus is good or bad, wherein the signal supply apparatus comprises:

a plurality of switching elements provided for the corresponding respective plurality of output lines, wherein the plurality of switching elements allow each of the plurality of output lines to be short circuited upon examination to thereby determine whether the signal supply apparatus is good or bad;

a test terminal for inputting a test signal that controls operation of each of the plurality of switching elements; and

a detection terminal that is connected to the short-circuited lines to thereby allow a current value detected on the short-circuited lines to be compared to a specified current value, and

wherein, after a voltage is supplied to the test terminal and each of the plurality of switching elements is operated, a voltage with a voltage width range corresponding to $\pm(\text{LSB})/2$ with respect to a signal having the specified voltage is supplied through the detection terminal to the short-circuit line, and a minimum value among the current values detected at the detection terminal in response thereto is compared with the specified current value to make the good-or-bad determination.

22. (Currently amended) A signal supply apparatus in which signals are subject to impedance conversion by a plurality of impedance conversion devices,

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respectively, and supplied to a plurality of output lines, wherein the signal supply apparatus is adapted to be examined to determine whether the signal supply apparatus is good or bad, wherein the signal supply apparatus comprises:

a plurality of switching elements provided for the corresponding respective plurality of output lines, wherein the plurality of switching elements allow each of the plurality of output lines to be short circuited upon examination to thereby determine whether the signal supply apparatus is good or bad;

a test terminal for inputting a test signal that controls operation of each of the plurality of switching elements;

a short-circuit line that short-circuits the plurality of output lines when the plurality of switching elements are operated; and

a detection terminal for detecting the composite current consumption value to thereby allow a composite current consumption value for the plurality of impedance conversion devices to be compared to a specified current value to determine whether the signal supply apparatus is good or bad, and

wherein, after a voltage is supplied to the test terminal and each of the plurality of switching elements is operated, a voltage with a voltage width range corresponding to $\pm(\text{LSB}) / 2$ with respect to a signal having a specified voltage is supplied through the detection terminal to the short-circuit line, and a minimum value among the composite current consumption values detected at the detection terminal in response thereto is compared with the specified current value to make the good-or-bad determination.